

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Original) A method for treating a wastewater stream, consisting essentially of acts of:
 - (a) adding, at a first position in the wastewater stream, a nitrate containing compound to the wastewater stream in an amount sufficient to reduce a concentration of at least one of atmospheric hydrogen sulfide and dissolved sulfide downstream of the first position to a desired concentration; and
 - (b) adding, at a second position in the wastewater stream, a compound consisting essentially of an alkaline material to the wastewater stream to reduce the amount of the nitrate containing compound added in act (a).
2. (Original) The method of claim 1, wherein the acts (a) and (b) are performed at the same position.
3. (Original) The method of claim 1, wherein acts (a) and (b) are performed simultaneously by adding a predetermined mixture of the nitrate containing compound and the compound consisting essentially of the alkaline material.
4. (Original) The method of claim 3, wherein the predetermined mixture includes sodium nitrate and sodium hydroxide.
5. (Original) The method of claim 1, wherein the compound consisting essentially of the alkaline material includes at least one of calcium hydroxide and sodium hydroxide.

6. (Original) The method of claim 1, wherein the nitrate containing compound includes calcium nitrate.
7. (Original) The method of claim 1, wherein the nitrate containing compound includes anthraquinone, and wherein the acts (a) and (b) are performed separately.
8. (Original) The method of claim 1, wherein the nitrate containing compound includes anthraquinone, and wherein the first position is spaced apart from the second position.
9. (Original) The method of claim 1, wherein the act (b) reduces the amount of the nitrate containing compound added in act (a) by at least 10%
10. (Original) The method of claim 1, wherein the act (b) reduces the amount of the nitrate containing compound added in act (a) by at least 20%.
11. (Original) The method of claim 1, wherein the act (b) reduces the amount of the nitrate containing compound added in act (a) by at least 30%
12. (Original) The method of claim 1, wherein the act (b) includes an act of adding the compound consisting essentially of the alkaline material to the wastewater stream in an amount sufficient to increase a pH of the wastewater stream downstream of the first position by approximately one unit of pH.
13. (Original) The method of claim 1, wherein the act (b) includes an act of adding the compound consisting essentially of the alkaline material to the wastewater stream in an amount sufficient to increase a pH of the wastewater stream downstream of the first position to between approximately 7.5 to 8.5 units of pH.
14. (Original) The method of claim 1, wherein the act (a) reduces the concentration of atmospheric hydrogen sulfide and dissolved sulfide downstream of the first position by at least

10%, and wherein the act (b) reduces the amount of nitrate containing compound added in act (a) by at least 10%.

15. (Original) In a wastewater treatment system that adds an amount of a nitrate containing compound to a wastewater stream at a first position in the wastewater stream to reduce a concentration of at least one of atmospheric hydrogen sulfide and dissolved sulfide downstream of the first position to a desired concentration, a method, consisting essentially of: adding, at a second position in the wastewater stream, an amount of a compound consisting essentially of an alkaline material to the wastewater stream to reduce the amount of the nitrate containing compound used to reduce the concentration of the at least one of the atmospheric hydrogen sulfide and the dissolved sulfide to the desired concentration.

16. (Original) The method of claim 15, wherein the act of adding includes an act of adding, at the second position in the wastewater stream, a sufficient amount of the compound consisting essentially of the alkaline material to the wastewater stream to reduce the amount of the nitrate containing compound used to reduce the concentration of the at least one of the atmospheric hydrogen sulfide and the dissolved sulfide to the desired concentration by at least 20 %.

17. (Original) The method of claim 15, wherein the act of adding includes an act of adding, at the second position in the wastewater stream, a sufficient amount of the compound consisting essentially of the alkaline material to the wastewater stream to reduce the amount of the nitrate containing compound used to reduce the concentration of the at least one of the atmospheric hydrogen sulfide and the dissolved sulfide to the desired concentration by at least 30 %.

18. (Original) The method of claim 17, wherein the sufficient amount of the compound consisting essentially of the alkaline material raises a pH of the wastewater stream downstream of the first position by approximately one unit of pH.

19. (Original) The method of claim 17, wherein the sufficient amount of the compound consisting essentially of the alkaline material raises a pH of the wastewater stream downstream of the first position to between approximately 7.5 and 8.5 units of pH.
20. (Original) The method of claim 15, wherein the amount of the compound added at the second position is sufficient to raise a pH of the wastewater stream downstream of the first position by approximately one unit of pH.
21. (Original) The method of claim 15, wherein the amount of the compound added at the second position is sufficient to raise a pH of the wastewater stream downstream of the first position to between approximately 7.5 and 8.5 units of pH.
22. (Original) A method of treating a wastewater stream, comprising acts of:
- (a) adding a nitrate containing compound at a first position in the wastewater stream;
 - (b) adding an alkaline material at a second position in the wastewater stream;
 - (c) sensing a level of at least one of atmospheric hydrogen sulfide, dissolved sulfide, and residual nitrate in the wastewater stream downstream of the first and second positions; and
 - (d) adjusting an amount of at least one of the nitrate containing compound and the alkaline material added to the wastewater stream in response to the act of sensing.
23. (Original) The method of claim 22, wherein the act (d) is performed by a computer.
24. (Original) The method of claim 22, wherein the act (b) includes an act of adding the alkaline material in an amount sufficient to raise a pH of the wastewater stream downstream of the first and second positions by approximately one unit of pH.
25. (Original) The method of claim 22, wherein the act (b) includes an act of adding the alkaline material in an amount sufficient to raise a pH of the wastewater stream downstream of the first and second positions to between approximately 7.5 and 8.5 units of pH.

26. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of increasing an amount of the nitrate containing compound added in act (a) when the level of at least one of atmospheric hydrogen sulfide and dissolved sulfide sensed in act (c) is greater than a desired level.

27. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of increasing an amount of the nitrate containing compound added in act (a) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are greater than a desired level.

28. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of increasing an amount of the alkaline material added in act (b) when the level of at least one of atmospheric hydrogen sulfide and dissolved sulfide sensed in act (c) is greater than a desired level.

29. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of increasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are greater than a desired level.

30. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater

stream downstream of the first and second positions, and wherein the act (d) includes acts of increasing an amount of the nitrate containing compound added in act (a) and increasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are greater than a desired level.

31. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the nitrate containing compound added in act (a) when the level of at least one of atmospheric hydrogen sulfide and dissolved sulfide sensed in act (c) is less than a desired level.

32. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the nitrate containing compound added in act (a) when the level of atmospheric hydrogen sulfide and the level dissolved sulfide sensed in act (c) are less than a desired level.

33. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the alkaline material added in act (b) when the level of at least one of atmospheric hydrogen sulfide and dissolved sulfide sensed in act (c) is less than a desired level.

34. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are less than a desired level.

35. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes acts of decreasing an amount of the nitrate containing compound added in act (a) and decreasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are less than a desired level.

36. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide, the level of dissolved sulfide, and the level of residual nitrate in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the nitrate containing compound added in act (a) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are less than a desired level and an average level of residual nitrate sensed in act (c) is approximately 1-2 mg/L or greater.

37. (Original) The method of claim 36, further comprising acts of:

- (e) sensing a pH of the wastewater stream at or prior to the second position; and
- (f) sensing a pH of the wastewater stream downstream of the first and second positions.

38. (Original) The method of claim 37, wherein the act (d) further includes an act of decreasing an amount of the alkaline material added in act (b) when the act (f) indicates that the pH of the wastewater downstream of the first and second positions is at least one unit of pH higher than the pH of the wastewater stream sensed in act (e).

39. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide, the level of dissolved sulfide, and the level of residual nitrate in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide sensed in act (c) is less than a first desired level, the level

of dissolved sulfide sensed in act (c) is greater than a second desired level, and an average level of residual nitrate sensed in act (c) is approximately 1-2 mg/L or greater.

40. (Original) The method of claim 22, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide, the level of dissolved sulfide, and the level of residual nitrate in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of increasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide sensed in act (c) is greater than a first desired level, the level of dissolved sulfide sensed in act (c) is less than a second desired level, and an average level of residual nitrate sensed in act (c) is approximately 1-2 mg/L or greater.

41. (Original) The method of claim 22, further comprising acts of:

(e) sensing a pH of the wastewater stream at or prior to the second position; and

(f) sensing a pH of the wastewater stream downstream of the first and second positions.

42. (Original) The method of claim 41, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide and the level of dissolved sulfide in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are less than a desired level, and the act (f) indicates that the pH of the wastewater downstream of the first and second positions is at least one unit of pH higher than the pH of the wastewater stream sensed in act (e).

43. (Original) The method of claim 41, wherein the act (c) includes an act of sensing the level of atmospheric hydrogen sulfide, the level of dissolved sulfide, and the level of residual nitrate in the wastewater stream downstream of the first and second positions, and wherein the act (d) includes an act of decreasing an amount of the alkaline material added in act (b) when the level of atmospheric hydrogen sulfide and the level of dissolved sulfide sensed in act (c) are less than a desired level, the level of residual nitrate sensed in act (c) is negligible, and the act (f)

indicates that the pH of the wastewater downstream of the first and second positions is at least one unit of pH higher than the pH of the wastewater stream sensed in act (e).

44. (Original) The method of claim 22, wherein the acts (a) and (b) are performed at a same position in the wastewater stream.

Claims 45-69 (Canceled).